

REMARKS

This is in full and timely response to the above-identified Office Action. The above listing of the claims supersedes any previous listing. Favorable reexamination and reconsideration are respectfully requested in view of the preceding amendments and the following remarks.

Status of Amendments/Claims

It is respectfully submitted that the finality of the rejection is premature. The Office Action indicates that the favorable reconsideration of the rejection was due to claim amendment. However, applicant submits that the amendments were predominantly to overcome formal issues and did not affect the scope of the claims to the degree that would appear to be purported in this Office Action. Therefore, the Applicants respectfully take the position that the finality of the Office Action is premature in that it was the arguments that were convincing not the amendments.

Claims 1-11 remain pending in the application and stand as they were rejected

As defined in claim 1 Applicants' invention relates to:

"A method for estimating the distances from a mobile, to the points of a map of a terrain over which the mobile is moving; said mobile being subjected to dynamic constraints prohibiting it from certain zones of the map, referred to as prohibited zones of passage, whose configuration varies as a function of the time of travel of the mobile; said map being extracted from a terrain elevation database, encompassing a set of points labeled by an altitude, a latitude and a longitude meshing the terrain of deployment of the mobile;"

This method implements a distance transformation, used in the technical domain of image processing, over the image constituted by the elements of the terrain database for estimating the distances of various point of the image with respect to a source point placed in proximity to the mobile.

said method implementing a distance transform operating by propagation over the image constituted by the elements of the terrain elevation database corresponding to the map and arranged in rows and columns in orders of values of longitude and latitude the distance transform estimating the distances of the various points of the image with respect to a source point placed in proximity to the mobile,"

As usual, in an image, this distance transformation estimates the distance of a goal point to the source point

by applying, by scanning, a chamfer mask to the various points of the image; the estimation of distance of a point, by application of the chamfer mask to this point termed the goal point being performed in the distance transform by cataloguing the various paths going from the goal point to the source point and passing through points of the neighbourhood of the goal point which are covered by the chamfer mask and whose distances from the source point have been estimated previously in the course of the same scan, by determining the lengths of the various paths catalogued by summation of the distance assigned to the point of passage of the neighbourhood and of its distance from the goal point, extracted from the chamfer mask, by searching for the shortest path among the paths catalogued and by adopting its length as estimate of the distance of the goal point; a distance value greater than the largest distance measurable on the image being initially allocated, at the start of the scan, to all the points of the image except to the source point, origin of the distance measurements, to which is assigned a zero distance value;

However, contrary to what is usual, in said distance transformation

the paths catalogued during the application of the chamfer mask

to a goal point with a view to searching for the shortest path, have their lengths translated into times of travel for the mobile and those catalogued paths whose times of travel for the mobile are such that the goal point would belong to a prohibited zone of passage at the moment at which the mobile reached it, are excluded from the search for the shortest path.

Rejections under 35 USC § 103

- 1) Claims 1-4 and 6-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tran (US 5,892,462), further in view of Zoraster (US 5,839,090).

The citation/application of Tran (US 5,892,462) is not seen as resulting in a tenable rejection inasmuch as this document does not relate to a method for estimating the distances from a mobile, to the points of a map of a terrain over which the mobile is moving. Tran's patent instead, relates to a ground collision avoidance system and never mentions or suggests the use of a distance transformation.

Tran discloses a ground collision avoidance system with a flight envelope predicting system operating with a high fidelity aircraft model for predicting the most possible or probable flight paths that will be flown and manoeuvred by the aircraft during a predetermined amount of time. This ground collision avoidance system provides ground collision avoidance warnings by searching the collisions of the most possible probable flight paths with a ground mapping. When a collision condition is detected, the system determines an initiation ground avoidance point (GAP) and displays a different flight path to be initiated at this point to achieve ground avoidance situation. The ground avoidance point is determined on location and time of impact with terrain calculated, forward time, by means of the instantaneous positions and inertial vector status from the aircraft's current positions based on the aircraft parameters (col. 6, lines 35-40).

The ground collision avoidance system of Tran estimates distances of points on predicted flight paths and not of a known point of a map.

Zoraster (US 5,839,090) on the other hand, is such as to describe a method using a distance transformation. However, the distance transformation described by Zoraster is not of

the same kind as the distance transformation defined in claim 1 because it is used with a plurality of source points (points with a zero forced estimated distance) for computer contouring that is to say for estimating distances relatively to objects defined by more than one source point and not for estimating distances of points of a map relatively to only one source point.

Moreover, the condition for searching the shortest paths is not dependent of times of travel for a mobile placed in proximity of the only one source point. Therefore, the distance transformation described by Zoraster cannot suggest the distance transformation defined in claim 1 of our patent application and therefore cannot be used in combination with the teachings of Tran for the purposes of leading the hypothetical person of ordinary skill to the claimed subject matter. That is to say, in order to establish a *prima facie* case of obviousness, it is necessary to show that the hypothetical person of ordinary skill would, without any knowledge of the claimed subject matter and without any inventive activity, be motivated to arrive at the claimed subject matter given the guidance of the cited references when each is fully considered as statutorily required.

Accordingly, it is submitted that it would not be obvious for one of ordinary skill in the art of estimating distances from a mobile, to the points of a map of a terrain over which the mobile is moving, to combine the teachings of the computer contouring method of Zoraster and of the ground collision avoidance system of Tran because of the difference of technical domains. Moreover, combining these two teachings, does not allow to obtain the method defined in claim 1 of our patent application using a distance transformation with only one source point and with a condition for searching the shortest paths dependent of times of travel for a mobile placed in proximity of the only one source point.

- 2) Claims 5 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Tran (US 5,892,462) and Zoraster (US 5,839,090), as applied to claims 1-4 above, and further in view of Margolin (US 6,177,943).

The rejection of claims 5-11 is not seen as being tenable in that claim 5 and claims 6-11 are directed to two very different subjects. Claim 5 is directed to the appearance of the displayed map. Claims 6-11 are directed to the scanning of the image constituted by the elements of the terrain elevation database corresponding to the map of the terrain over which

the mobile is moving by the chamfer mask of the distance transformation.

Moreover the application of Margolin (US 6,177,943) is not understood because its teaching directed to a digital elevation database compression has nothing to do with the displaying of deviations with the ground of the forecastable altitude of the aircraft or with the scanning of an image by the chamfer mask of a distance transformation. It is therefore submitted that the inclusion of the teachings of Margolin does nothing to improve the situation and un-muddy the waters which result from any consideration of Tran and Zoraster.

Conclusion

It is respectfully submitted that the claims as they stand before the Patent Office are allowable over the art which has been applied in this Office Action for at least the reasons advanced *supra*. Favorable reconsideration and allowance of this application are courteously solicited.

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 07-1337 and please credit any excess fees to such deposit account.

Respectfully submitted,
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